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A National Environmental/Energy Workforce Assessment. Region X

National Field Research Center, Inc, Iowa City, Iowa

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A National Environmental/Energy Workforce Assessment

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16. ABSTRACT

This study is one of 70 volumes assessing the workforce needs (manpower needs) for pollution control and abatement in the United States for the five-year period of 1976 through 1981. Seven fields for pollution control — air, noise, pesticides, potable water, radiation, solid waste, and wastewater — are analyzed, together with energy-related programs currently accentuated by the national effort to solve energy supply problems.

Designed as Phase I of a three-phase program, the complete assessment includes the following volumes: one each for the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands; one for each of the ten EPA regions; a one-volume National Abstract; a volume on National Legislation; a volume on Business and Industry; and a four-volume National Summary. The information was gathered through extensive personal interviews with responsible federal, state, and local officials in every state; with officials of representative private industrial and commercial firms; and with representatives of national industrial and trade organizations.

Phase II will develop a broad national inventory of the entire range of post-secondary and higher education training offered in the pollution control and energy areas cited above, and Phase III will offer demonstrations for curriculum changes or modifications which appear necessary to assure an adequate and properly trained national environmental/energy workforce.

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for

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Input from State environmental and energy personnel regarding federal activities in these areas proved helpful in substantiating and clarifying information gathered from Regional personnel. Credit will be noted to these persons in the respective state reports.

PREFACE

This study presents an overview of existing workforce levels, training programs, career potentials, and major activities within the Region X office of the U.S. Environmental Protection Agency (EPA). Staffing level projections (1977-1982) are also developed based upon available information. EPA program areas included in this report are: air, noise, pesticides, potable water, radiation, solid waste, and wastewater. In addition, a section relating to Federal activities in the area of energy conversion/conservation has been included.

This Regional report is designed to supplement four additional reports, one for each State within Region X. The information and data presented in this and the other reports were compiled largely as a result of interviews with professionals working in the respective areas. It should be pointed out that the data, where not documented by records, represent the best professional judgments of these experts.

FOREWORD

Information for this report was largely compiled from on-site interviews with professionals within the Region X Environmental Protection Agency and within the Regional energy agencies under review. In an effort to clarify and revalidate the information, interviews were supplemented with telephone conversations during the later phases of research activity. It must be noted that a large portion of the information contained herein represents the best professional judgements of those persons surveyed.

This report provides information concerning seven pollution control fields of the EPA, and contains synopses of federal energy-related programs within the boundaries of Region X. The pollution control areas included are: air, noise, pesticides, potable water, radiation, solid waste, and wastewater. Within EPA, the compartmentalization of employees into these seven areas is not a completely clear-cut process. Functions occasionally overlap, inter-divisional cooperations occur, and certain components serve a supporting role to the entire Agency. An effort has been made, however, to segregate the workforce into pollution control areas as noted above.

Additional information regarding future priorities and major goals has been obtained through in-depth literature research and legislative review.

National Environmental Energy Workforce Assessment

Phase I

REGION X

Report

REGIONAL PROFILE

EPA Region X maintains responsibilities encompassing the states of Alaska, Idaho, Oregon, and Washington. The total geographical area of these states is 833,724 square miles. This region has extreme diversity in its climatic and geographical conditions, ranging from the frozen northern areas of Alaska to the desert-like eastern sections of Oregon and Washington.

Special problems in management and planning are created by the 40,000 miles of coastal shoreline. This coastal area, along with its hundreds of small inlets and islands, provides an estimated 665 million pounds of fish and seafoods each year in addition to the numerous deep water ports which have established large import-export trade in this area.

The pulp and paper industry in Region X represents 54 percent of the total industry. With 36 mills, the region has five of the nation's six dissolving grade sulfite pulp and paper mills.

Other major industries include the Boeing Company, manufacturer of some of the world's largest aircraft, and the Alyeska Pipeline and Service Company, currently constructing the Trans-Alaska pipeline facilities. In addition, large mining and smelting operations are scattered throughout the region; this activity includes production of 60 percent of the nation's aluminum.

Agricultural activity is located primarily in the eastern sections of Oregon and Washington, and the southern portion of Idaho. For the most part, crops grown in this area are processed, packaged, and transported by facilities provided within the region.

There is an approximate regional population of 6,954,114, according to 1975 census reports. Major population centers include Seattle, Spokane, Tacoma, Portland, Boise, and Anchorage. Four out of the six major centers are west coast shipping ports. These areas have been used for transportation of lumber and manufactured goods since the 1800's. Present day port activity involves transportation of lumber, oil, metal ore, agricultural products, and manufactured goods.

Region X is blessed with approximately 40,000 miles of coastal shoreline which provides an estimated 300 million dollars in fisheries products each year. Fishing activity is expected to increase in the near future with the enforcement of the recently enacted 200-mile fisheries zone.

The abundance of natural resources in Region X has prompted industrial concerns to cluster around natural seaports with relatively low cost electrical power. The aluminum industry has been booming in the Northwest for just those reasons. Bauxite ore is easily provided by natural seaports, and the enormous amount of electrical energy needed to produce aluminum has been made available at a low cost through the massive hydroelectrical production capabilities of this area.

In conclusion, the natural resources, the industrialization and the esthetic beauty and diversity of the Northwest all provide for a growth oriented future. While growth may boost the economy and sustain a high level of living standards, care must be taken during this growth to maintain good environmental conditions. Pollution of air, water and land can only be controlled through the vigilant efforts of a concerned public and a competent, effective environmental protection service.

Organizational and Operational Structure

EPA Region X is responsible for the administration of national environmental protection standards in the basic areas of air, water, solid waste (hazardous materials), pesticides, noise, and radiation. While some of EPA's authority was contained in the original Presidential Executive Order, Congress subsequently increased this authority with the Clean Air Amendments and the Resource Recovery Act in 1970; the Federal Water Pollution Control Act Amendments, the Federal Environmental Pesticide Control Act; the Noise Control Act; and the Marine Protection, Research and Sanctuaries Act - all in 1972; and the Safe Drinking Water Act in 1974.

The majority of these acts are dependent upon the ability of State and local agencies to assume regulatory responsibility and enforcement capabilities. EPA Region X has identified its pollution control and abatement mission as best realized through the delegation of these responsibilities to state and local agencies.

Authority has already been assumed for several pollution control programs by state and local agencies. Some of the most recent activities occurred in 1975, when Washington State assumed authority for two vital air pollution control programs, New Source Standards and National Emission Standards for Hazardous Air Pollutants. It was the first state in the nation to assume these responsibilities. Also, Region X has recently delegated to all state governments within its regional boundaries the

authority to assume responsibility for certain portions of the wastewater construction grant program.

Figure 1 gives the organizational chart for EPA Region X. The five divisions at the Seattle Regional office perform the following functions under direction of the Regional Administrator.

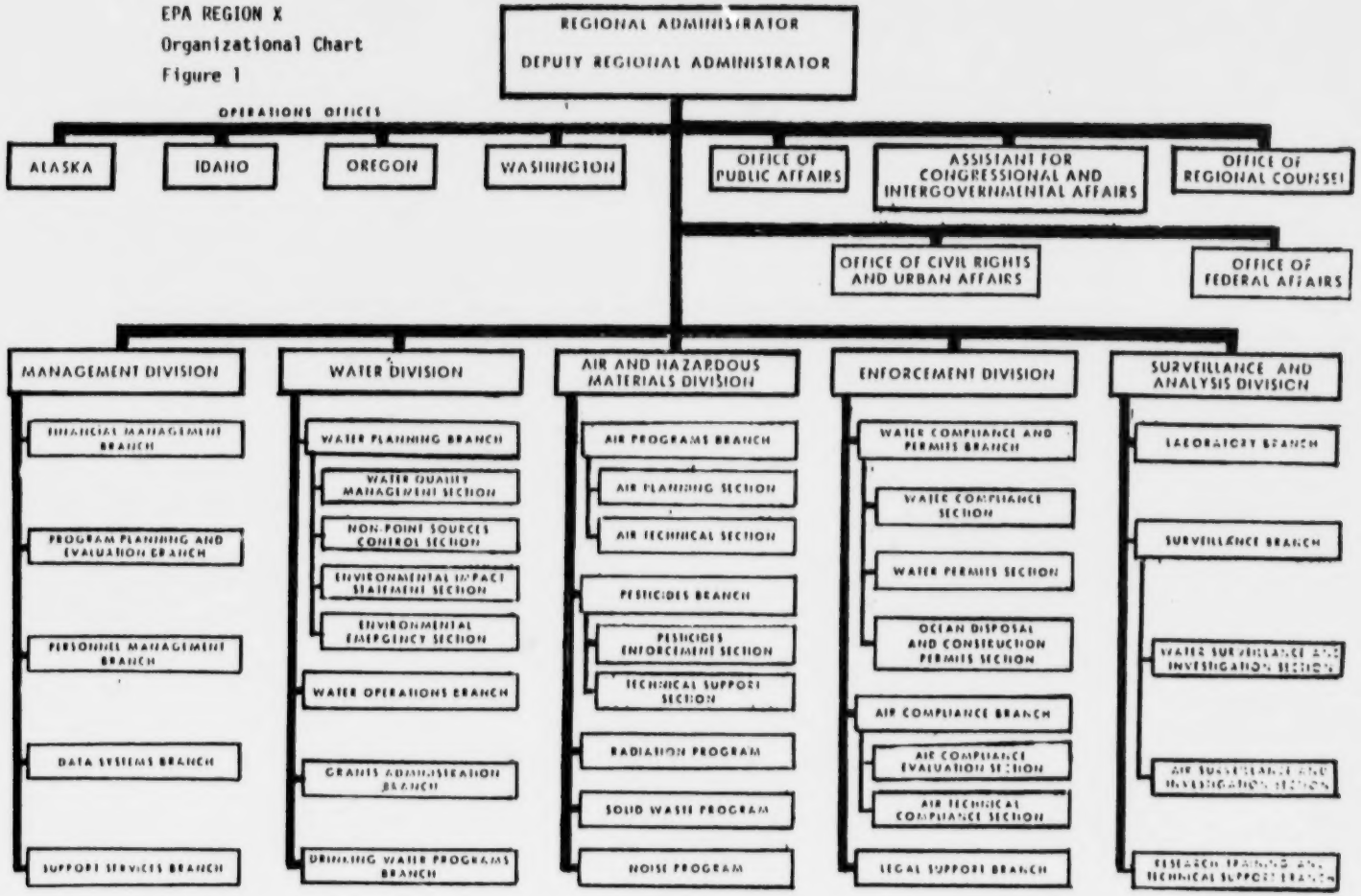
1) Management Division - Provides planning and management advice and services, and administrative management support to all components of the Regional office. Specific functions include personnel management, financial management, regional program planning, development and evaluation, budgeting, automatic data processing, safety and security, library services, facilities and space management, and general services.

2) Surveillance and Analysis Division - Conducts studies and collects, analyzes, and evaluates environmental quality data, directs and coordinates surveillance, pollution source inventory, and monitoring activities within the Region and provides necessary analytical support services. Directs the operation of subregional laboratory elements and provides advice and assistance to State and local agencies concerning techniques, methodology, quality control, and laboratory support. Conducts special studies, investigations analysis and surveys, and implements regional monitoring programs, Directs and coordinates the review of other agencies' environmental impact statements (EIS) and prepares EIS's for EPA Region X. Manages the Region's R & D Technology Transfer Programs, and manpower training activities.

3) Enforcement Division - Recommends to the Regional administrator goals, priorities, and objectives for the Regional Enforcement, Permits and Permits Administration Program, and is responsible for the development, coordination, implementation, and evaluation of these programs. Evaluates the current compliance status within the Region, establishes goals and priorities for improving the degree of compliance and selects strategies and techniques for achieving improvement.

4) Water Division - Recommends to the Regional Administrator goals, priorities, and objectives for the Regional Water Program, including the Water Supply Program, and is responsible for the development, coordination, implementation, and evaluation of these programs.

EPA REGION X
Organizational Chart
Figure 1



5) Air and Hazardous Materials Division - Recommends to the Regional Administrator goals, priorities, and objectives for the Regional Air, Noise, Radiation, Pesticides, Toxic Substances, Solid Waste Management, and is responsible for the development, coordination, implementation, and evaluation of these programs.

EPA Region X employs 267 permanent, full-time people and a fluctuating number of temporary, part-time and student aides. The following breakdown of personnel by discipline and areas of employment changes to some degree from year to year, based on Regional priorities and less-than-full-time staffing needs.

TABLE I

1976 Staffing Level Figures for
U.S. EPA Region X

Position	1976
Administrative	32
Professional	183
Technical	12
Clerical	77
TOTAL	304

NOTE: part-time personnel over and above full-time total of 267 have been included in above table

It must be noted that in preparing the above table, a sizeable margin of error existed, which must be taken into consideration. For instance, placing persons into categories is largely a subjective procedure, especially when one is making determinations based mainly upon job titles. As the information was obtained from a computer printout,

possibilities exist in computer error, or in job titles not accurately representing a person's responsibilities or background.

Regional Pollution Control and Abatement Programs

I. AIR

A. Workforce Profile

U.S. EPA Region X Air Program personnel have provided information regarding the current and future problems and priorities confronting the area of air pollution control. Specific responsibilities assigned to this section include evaluation and review of state implementation plans, technical assistance for and review of state indirect source control plans, procedural and policy guidance to state and local air pollution agencies in developing and adjusting plans for attaining and maintaining the air quality, analysis and development of regional policies on the air pollution aspects of regional economic patterns, land use, and energy trends. These activities, in addition to monitoring and surveillance activities, are only part of the total responsibilities of the air pollution section.

In the future, major priorities will be a result of mandates set forth in Clean Air Act Amendments.

The workforce figures for this section are compiled from the Air and Hazardous Materials, Enforcement, and Surveillance and Analysis Divisions. Current staffing levels in air are provided by professions in Table II.

TABLE II

Current (1976) Region X

Air Pollution Control Staffing Level

Position	1976
Engineer	
Chemical	4
Civil	1
Environmental	4
Sanitary	1
Mechanical	1
Trainee	1
Meteorologist	1
Technician	
Engineering	1
Physical Science	1
Training Aide	
Environmental	4
Clerical	4
Environmentalist	11
Other*	4
TOTAL	38

* includes one commissioned officer, one fuel inspector, and two administrative personnel

B. Workforce Projections

Although some air programs are understaffed at this time, additional workforce to meet requirements of new and amended legislation will likely be handled by the shifting of existing personnel. Substantial demands will be placed on Region X staff throughout 1977 and 1978 to provide technical assistance to states in the revision of existing and/or the development of new control strategies for attainment and maintenance of national ambient air quality standards. Significant increases in activity by the states of Alaska and Washington pursuant

to attaining and maintaining carbon monoxide standards will also entail increased technical assistance and consultation from Region X staff.

These particular priority projects will necessitate shifting personnel; but because standards are still in the developmental stages, the number of regional personnel needed to assist in implementation has yet to be determined. To project this activity at this time would not provide a realistic or accurate picture of the future.

C. Training and Certification

EPA Region X is expected to attain and maintain the National Ambient Air Quality Standards for the criteria pollutants. Regional EPA air program staff have determined the following training needs to assist in accomplishing these objectives.

In the area of emission control, there is a need to train approximately 3,000 auto mechanics in maintenance and adjustment in Oregon and Washington. In addition, a need exists for training approximately 75 community college auto mechanic instructors in both of these states with upgrade training needed for 75 inspectors in Oregon.

Direct training courses for approximately 150 local and state environmental air technicians are expected to be needed, with most requiring advanced instruction. In FY 76, the following courses were scheduled in Region X to assist in meeting these needs:

1) Air Pollution Control Technology
2) Legal Aspects for Control Agency Decision Makers
3) Source Sampling for Particulate Pollutants

4) Control of Gaseous Emissions

5) Control of Particulate Emissions

Provisions for training and availability of training grants to air pollution control agencies personnel and other qualified people are contained within the stipulations of Public Law 90-148, Section 103. Region X has indicated that funding resources made available through this law are rapidly diminishing. In response to this, air program priorities will provide direct training for State and local air pollution staff. The EPA Regional Manpower Office plans to assist the State agencies in reaching self-sufficiency in the priority program areas noted previously in the following ways:

1) Provide training grants for training auto mechanic instructors, auto mechanics, and inspectors in support of Inspection and Maintenance.

2) Provide direct training programs for state and local air pollution staff.

3) Support and encourage EPA staff as instructors at state or local sponsored workshops and training courses. EPA provided instructors at state sponsored workshops in all four states on source tests, which proved to be most successful. The Washington State Department of Ecology held a two-day workshop in meteorology in April, 1976, and EPA Region X provided a guest instructor. It is felt this type of technical assistance can contribute greatly towards self-sufficiency.

D. Career Potential

Professionals working in air pollution control have indicated that within the next five years, there will be a need for people thoroughly

trained in economics, mathematics, statistics, law, state and local government, public participation, and program management. These people should have interpretative abilities beyond their specific disciplines. There will be a need for technically based mid-level program managers and decision makers to put total environmental interpretation on economic/environmental trade-offs and impacts. Employment opportunities for non-degreed personnel should increase outside government in areas of equipment manufacturing and equipment maintenance, sampling, testing, and technical data storage and retrieval systems.

E. Conclusion

Definite future trends have become increasingly apparent after reviewing the available information concerning federal involvement in air pollution control. Specifically, Region X's strategy will be to continue assigning high priority to planning and compliance programs in air. Increased emphasis will be placed on continued delegation of authority by the region to the state and local agencies via cooperative agreements and grants. In the next five years, air programs will need more extensive air quality, weather, and model data on which to base planning decisions in the areas of transportation, urban planning, and facility siting. Personnel needed to accomplish these goals will be generated primarily through existing resources.

II. NOISE

A. Workforce Profile

The noise program within EPA's structure has been identified as a low priority program to date. According to the FY 76 regional noise guidance, urban and residential environmental noise levels are exceeding the levels identified by EPA to protect the public health and welfare. The reduction of these levels is dependent on federal action through regulations which will assure the utilization of presently available technology. These technologies must be applied to future models of products identified as major sources of noise and certain equipment already in use by interstate truck and rail carriers.

Present workforce activity at the EPA Region X level involves one generalist and one part-time engineer from the Air and Hazardous Materials Division, Noise Program.

B. Workforce Projections

There are no major increases anticipated in the noise program workforce at this time. Due to other priorities, minimal workforce resources have been assigned to this area.

C. Training and Certification

Primary enforcement action is currently carried out by state and local agencies. To assist in this effort, approximately 20 state and local staff need to be trained in the enforcement of land use standards

(the maximum environmental noise levels which are set according to the zoned property). In addition, approximately fifty state and local staff (policemen and Health Department staff) need to be trained in motor vehicle standards to allow them to measure noise levels of motor vehicles. The policemen would then be responsible for apprehending violators.

D. Career Potential

Career opportunity will be restricted to personnel with specialized noise control engineering backgrounds. This workforce must have analytical capabilities applicable to community planning in the area of noise sources, siting and zoning.

E. Conclusion

In the future, shifting priorities may provide additional activity in noise pollution control, but at the present time the main objective of the noise program is to provide technical assistance and public education information to state and federal agencies. Enforcement of existing noise regulations is carried out by state and municipal entities with little success at this point in time. A more stringent approach at the federal level may be necessary to facilitate enforcement activity.

III. PESTICIDES

A. Workforce Profile

The Pesticides Branch of EPA Region X plans, proposes, and implements a pesticides program based on national guidance and the regional situation. The primary objective of the program is to control the adverse effects of pesticides on people and their environment while retaining the social and economic benefits of pesticides.

Elements of the program include control of pesticide products through regular inspection of regional pesticide manufacturers, investigating and reporting incidents involving the adverse effects of pesticides, monitoring experimental permits, surveillance of domestic and foreign pesticides, and providing financial support for State pesticide programs.

In 1976, the Office of Pesticide Programs (EPA) provided approximately 4 million dollars for assisting the states in developing, implementing and operating applicator training and certification programs. Although Congress has provided these funds only during FY 75-77, the States have indicated that this funding must continue beyond 1977 or the state programs will collapse. If funding is limited, then the process of delegating authority to the States in this area may be slowed.

Region X maintains a workforce of six full-time professionals. This consists of one Environmental Protection Assistant and five Consumer Safety Officers, whose minimum requirements are a bachelor's degree in a biological, environmental, or agricultural field.

B. Workforce Projections

Presently, the EPA Pesticides Office has met the national outputs for certification of pesticide applicators and State registration for special local needs. With zero growth through FY 77, it is expected that these priority areas will still be satisfied. However, other lower priorities such as regional concurrence prior to granting Section 18 emergency exemption and regional authority to certify a state as qualified to issue state registration may not be fulfilled.

It should be stated that the above two authorities plus regional authority to approve, disapprove and withdraw approval of state certification plans has just recently been redelegated from Headquarters to the Regional Administrator. This is the first of a series of decentralization actions aimed at placing more pesticide program authority at the regional level.

At an optimum, three additional people will be added to the regional staff. Positions will be needed in order to assume the added workload accompanying the redelegation and to maintain properly the remainder of the abatement and control activities. One person will be needed specifically for handling registration (assisting registrants with federal registrations.) Another person would be used to assist with state experimental permits and fill the void in monitoring activities resulting from transferring resources to the redelegation areas. Under optimum conditions, an additional person would be used in such areas as pesticide accidents, monitoring surveys, public awareness programs, development of training modules and integrated pest management.

C. Training and Certification

EPA transferred several million dollars to the Department of Agriculture to train private applicators for certification to use restricted-use pesticides, but there will be no resources available beyond FY 77 for further training. However, EPA has contracted for the development and dissemination of training materials specifically for use in vocational-agricultural type programs to support and encourage increased training activities in this area. As a start, regional and state workshops were held for State Directors of Vocational Education, Assistant Regional Commissioners for Occupational and Adult Education, State Cooperative Extension Directors, as well as Regional EPA staff to explain the materials and seek support for their distribution into the state vocational education system.

The FIFRA legislation provides that restricted-use pesticides, those which may cause unreasonable adverse effects on the environment even when applied in accordance with directions for use, must be applied by or under the supervision of a certified pesticide applicator.

To meet these certification requirements by October, 1977, approximately 36,000 private applicators (the majority of these are farmers) will need training in the safe and effective use of pesticides in Region X. There are approximately 4,000 commercial applicators in need of training; however, it is anticipated the states will be responsible for their training.

D. Career Potential

In future hiring, pesticide programs supervisors will be looking for broad-based specialists in the fields of biology, chemistry, law enforcement, entomology, and public health who are environmentally diversified, but capable of bringing specialized knowledge to the team effort. Additionally, these people will need to deal effectively with people at all levels and to understand interrelationships between the different governmental, private industry, and public sectors. Regional program managers will be looking to a national group of specialists for criterical in-depth technical support, rather than maintaining single-purpose individuals whose disciplines and training have limited field application.

E. Conclusion

After reviewing the pesticide situation in Region X, it is clear that the majority of monitoring, registration, and enforcement activity will be at the state level. Technical assistance and financial support for training programs to assist the estimated 36,000 private applicators in becoming certified in accordance with FIFRA standards will be the prime function of the Regional office in the future. This effort will necessitate the addition of one professional staff member to develop and administrate training activities. However, sources in the field have indicated that the full effect of FIFRA legislation on Regional workload activities will not be realized until a specific list of restricted-use pesticides has been developed.

IV. POTABLE WATER

A. Workforce Profile

The Water Supply Program, although a relatively new agency function, will continue to be a high priority activity. The emphasis during the next five years will be on the states' assumption of primary surveillance and enforcement responsibility for drinking water management. For those water systems over which the States do not have jurisdiction, a regional program for surveillance and enforcement of water systems will be established. Regional assistance will also be provided to utilities to assist them in meeting Interim Primary Drinking Water Regulations and to assist the states in establishing underground water source protection programs.

Personnel listed in Table III below represent the current workforce involved with management, enforcement, and planning of regional potable water supply.

TABLE III

Current (1976) Region X
Water Supply Staffing Level

Position	1976
Engineer*	3
Environmentalist	1
Environmental Protection Specialist	2
Commissioned Officer (PHS)	1
TOTAL	7

* includes chemical and sanitary engineer

B. Workforce Projections

Growth at the regional level is expected to be small, at an optimum, two additional specialists will be needed to implement regulations and provide initial review of procedures for exceptions and variances to meet guidelines. As in many other areas, workforce activity is shifting to the state and local agencies with management and enforcement responsibilities being delegated from the regional headquarters level. It has been suggested by professionals in the field that delegation of such responsibilities will be a slow process, as water supply criteria, standards and guidelines are felt to be designed inappropriately to fit the capabilities of state and local programs. As a consequence, achieving necessary guideline schedules may proceed at a slower pace. Seattle headquarters' office will continue to assume full responsibility until delegation problems have been resolved.

C. Training and Certification

There will be increased activity in this area as EPA and the states work closely to ensure that regional-state resources are being applied in the best manner to achieve the goals of the Safe Drinking Water Act as the implementation of this Act is one of the Agency's highest priorities. Professionals in EPA's manpower planning section have identified a need to train approximately 110 state and local agency staff by the end of 1976, and about 150 additional state and local staff by 1980, so that state drinking water supply agencies will be fully phased into assumption or primary responsibility for surveillance of water supply systems and enforcement programs. More specifically, the guidelines as now established are

complex, requiring considerable field work and preparation of lengthy reports. In turn, this situation has the effect of overloading already fiscally constrained state staffing complements.

State and local water supply staff need to be trained to evaluate water systems, carry out sanitary surveys and develop staff programs to meet the requirements of the state water supply program.

Public Law 92-523, Section 1442 (b3), established legislation designed to provide for these training needs. Funding provisions outline procedures for making grants to, or entering into contracts with, any public agency or educational institution of any project or activity which is designed;

1) to develop, expand, or carry out a program for training persons for occupations involving the public health aspects of providing safe drinking water;

2) to train inspectors and supervisory personnel to train persons in occupations involving the public health aspects of providing safe drinking water.

The following describes ways in which the EPA Regional manpower office plans to assist the state agencies in reaching self-sufficiency by:

1) providing and encouraging training grants for training of state agency staff who could in turn train water supply operators,

2) encourage use of EPA staff as instructors at state sponsored workshops and training courses.

D. Career Potential

Since the northwest states are assuming responsibilities regarding implementation of the Safe Drinking Water program, career opportunities

at the federal level will be extremely limited. Small increases may be expected to facilitate administration of this transition, but the major opportunities will be at the state and local level. Specific disciplines needed to assume self-sufficiency at the state and local levels will be as in the past, e.g., primarily sanitary engineers, biologists, microbiologists, and chemists; however, the technical expertise will have to be combined with broad environmental conceptual ability and awareness of state and local governmental operations and problems.

E. Conclusion

The foregoing suggests that the major workforce needs will be concentrated at the state and local level. In the next five years, EPA Region X will invest the majority of its efforts toward regional planning, technical assistance to state agencies, and development of training programs to support state and local program personnel.

The Safe Drinking Water Act will be of major importance to regional activity in the future. If any of the States in the Region fails to develop and maintain a program commensurate with regulations, it will be necessary for EPA Region X to assume the portion of activities not covered by the state. If this were to occur, additional workforce resources will be needed at the Regional level. The specific number of additional personnel may vary from one to four, dependent upon state primacy acceptance.

V. RADIATION

A. Workforce Profile

EPA Region X's radiation program, under the direction of the Air and Hazardous Materials Division, maintains identification of major radiation sources and problems in the region. EPA's goal in the radiation area is to protect public health and the environment by assuring that no avoidable risks occur to individuals or the environment due to radiation exposure.

To achieve this goal, the Radiation Program will provide advice and technical assistance to states in meeting their needs for regulation of radiation hazards. This assistance will emphasize development and testing of state radiological emergency response plans and investigations of radiation sources such as uranium tailings, phosphate mining activity and regional nuclear facilities. The regional office maintains a staff of two radiological health specialists at the present time and anticipates little or no growth to occur over the next five years. This zero growth management policy is based on the delegation of authority to state and local agencies.

B. Training and Certification

To attain the goal of greater state self-sufficiency, the Region X radiation staff has determined that at least four state programs are in need of training, primarily in the areas of responses to nuclear emergencies, transportation accidents, and radiation from phosphate industries.

C. Career Potential

The most promising resource for future career opportunities in Region X will be in the Hanford Energy Research and Development Laboratories located in Richland, Washington, and the Idaho National Engineering Laboratory Site, located in Idaho Falls, Idaho. These two Energy Research and Development Administration installations employ a total of 8,900 people with technical expertise in the disciplines of:

Chemical Engineering
Mechanical Engineering
Chemistry
General Engineering
Business Administration
Electrical Engineering
Life Sciences
Mathematical Statistics
Metallurgy
Earth Sciences
Atmospheric Sciences
Liberal Arts

While specific radiation workforce levels were not available; personnel with expertise in radiation control will enjoy career opportuntities in conjunction with extensive nuclear research activity and nuclear waste storage.

D. Conclusion

At the present time, radiation is a low priority program, but is a definite component of the Region's long-term strategy. Increasing activity in nuclear power production and continued use of radioactive materials

in industrial production will generate additional monitoring and surveillance responsibilities for federal, state and local agencies. State radiation specialists will assume the majority of this responsibility with the decentralization and delegation of authority continuing to dominate EPA management philosphy.

VI. SOLID WASTE

A. Workforce Profile

The Solid Waste section is housed within the Air and Hazardous Materials Division. Program goals and objectives have been designed to meet standards set forth in the Solid Waste Disposal Act as follows:

1) Initiate and accelerate research and development programs for new and improved methods of proper and economical solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovering utilization of potential resources in solid waste;

2) Provide technical and financial assistance to state and local governments and interstate agencies in the planning, development and conduct of solid waste disposal programs;

To accomplish these purposes, the act authorizes action:

a) conducting and supporting research;

b) providing training programs;

c) providing technical assistance to local and state governments

d) providing up to two-thirds financial support for local and state projects to demonstrate new and improved waste disposal technology;

e) providing up to two-thirds financial support for the development of area wide solid waste management systems to coordinate disposal responsibilities among small communities, and

f) providing up to 50 percent financial support for state service to provide programs for meeting these requirements.

The current (1976) staff of the Solid Waste Section consists of two sanitary engineers and one clerk-typist.

B. Workforce Projections

The recent passage of the Resource Conservation and Recovery Act of 1976 (RCRA) will require additional activity within the Solid Waste Section. Technical assistance will be needed by state and local solid waste management personnel in an effort to comply with the guidelines set forth in the Act. Lists of hazardous waste disposal sites must be developed, types of wastes must be identified, and resource recovery sites and land disposal sites must be inventoried.

It has been indicated by professionals in the field that an increase in the current staffing level will be necessary to accomplish the goals set forth in the RCRA. This increase has been estimated to require a doubling of staff. A further possibility exists, depending upon the initiative of states in developing and implementing their programs, that additional personnel may be needed to develop program designs and administrate the regulatory mandates as defined within the Act until the states can demonstrate the capability to accept primacy.

C. Training and Certification

At the present time, there are no major training activities at the Regional level. However, grants have been awarded to individual states to develop, expand, and carry out a program for training persons in occupations involving the management, supervision, design, operation and

maintenance of solid waste disposal and resource recovery equipment and to train instructors and supervisors to conduct training of persons in the above occupations.

EPA's solid waste management program goals are to assure that acceptable and safe methods of managing solid waste are utilized and that material and energy resources through the recovery and reduction of solid waste are conserved. The Region X Solid Waste Program staff feels that approximately 130 sanitary landfill operators are in need of training as better disposal operations are being developed. There is also a need to train three state staff in Alaska to prepare them for training solid waste landfill operators. Increased training activity is expected to occur in the near future as a result of the funding provisions of the RCRA. Specific training workforce resources have not yet been identified, as RCRA implementation strategies are still in the developmental stages, but it is expected that professionals with expertise in civil engineering and resource management will be needed to provide training to state and local solid waste/resource recovery personnel. Training will include the areas of resource recovery, resource conservation, and hazardous waste management.

D. Career Potential

In the future, career opportunities will become available at the state and local levels. Requirements for well-trained non-degreed personnel will exceed the demand for persons with technical degrees. There will, of course, always be a need for environmentally oriented engineers,

economists with backgrounds in environment and resource recovery, planners for facility siting, and managers with technical backgrounds for transfer stations and resource recovery stations.

E. Conclusion

As a result of the passage of the RCRA, staffing needs within the solid waste section will likely increase. Specific projections are difficult to make at this time, since passage of the Act is so recent, but it is obvious that a number of major changes are about to take place.

Regional population increases directly affect the volume of solid waste requiring disposal, consequently, landfill site planning and disposal technology are expected to require increased efforts. Future program emphasis is anticipated to be for the development of state programs capable of implementing state control over all land disposal sites where any type of waste, except radioactive, is disposed of; initiating hazardous waste control programs; stimulating the recovery of energy and material resources from solid waste; reducing solid waste generation; and utilizing land use planning procedures in the siting of solid waste management facilities.

VII. WASTEWATER

A. Workforce Profile

EPA Region X, Water Division, under the supervision of a Director, recommends to the Regional Administrator goals, priorities, and objectives for the Regional Water Program. The program is responsible for the development, coordination, implementation, and evaluation of these programs; for assisting states in developing comprehensive programs, including implementation plans for the achievement of water quality standards; for operating a municipal wastewater systems program, including reviews of facility plans and specifications, monitoring construction programs, and conducting grants programs; for coordinating areawide planning and other water quality planning activities; and for developing control strategies for non-point source dischargers and ocean dumping.

Priority programs, as designated by Dr. L. Edwin Coate, Deputy Regional Administrator, Region X, in the FY 1978-82 Region X Preview Package, include the following wastewater areas.

1. Construction Grants: The Construction Grant program priority is maintaining a grant program which makes funds available to municipalities on a priority basis. Emphasis will be placed on furthering delegation of program responsibilities to the states, while at the same time increasing the delegation of auditing capability to ensure proper management of the grant programs. An additional area, which is considered

to be of national concern, is the need to increase Operations and Maintenance (O & M) efforts to reduce municipal pollution by obtaining optimum operation of wastewater treatment facilities. Effective management of the construction grants will also be furthered through the development and use of such mechanisms as a computerized construction grants tracking system. A major problem to be confronted will be an increased workload associated with interim inspection, the O & M effort, and the delegation of construction grant functions. The extra amount of regional resources required to delegate functions adequately, combined with the present inability of the state agencies to assume further delegation is a major concern. The difficulty and lack of adequate monitoring data concerning combined sewer overflows will also present future problems in the adequate management of the Contruction Grant Program.

2. Water Compliance and Permit Programs: Water compliance and permit activities will continue to require both attention and resources over the next five years. Increasing legal and technical complexities will not allow for a reduction in the main National Pollutant Discharge Elimination System (NPDES) effort. The modification of permits, if stipulations concerning toxic substances are required, will result in a considerable new workload. Oil exploration activities in Alaska will increase significiantly the number of Section 402 permits and associated environmental impact statement of Corps of Engineers permit reviews. To protect effectively the fragile wetlands of our coastal areas, the capability and expertise in reviewing Section 402 permits must be increased. In addition, possible amendments to the Federal Water Pollution Control

Act (FWPCA) may affect workload and resource requirements radically. Region X foresees little activity in ocean dumping over the next five years. The national policy is to discourage ocean dumping and to require an EIS before a permit is issued. These factors and the historical trend in the Region not to use ocean dumping have tended to encourage other means of disposal. Region X can continue the anticipated level of activity with no increase in staff.

3. Program Planning for Water: Water Quality Planning must continue as a national priority program. The 208 program provides an initial focus on water quality management planning, especially in the development and practical implementation of a water quality management process that will result in the States meeting the 1983 water quality goals. Concurrently, there is an emphasis on the need for the States to evolve a continuing water quality management process to extend beyond the initial two-year period of the 208 program. The continued achievement of water quality goals and standards will require the initiation of a long-range planning effort built on the results of the 208 and other planning programs.

4. Non-Point Source: The development of non-point source control water quality management programs will require major initiative in the Region. A concerted effort will be necessary to ensure the establishment and implementation of a non-point source program with regulatory backing. An increase in state and federal agency resources to deal with non-point source pollution will be needed in the future. Among the major problems anticipated over the next five year period are a lack of adequate knowledge of non-point source problems and the necessity of

developing new technologies for identifying non-point source problems. A concerted effort in research and development will be necessary to resolve the problems. More importantly, the lack of effective control mechanisms at the state and local level seriously hampers the development of a comprehensive non-point source pollution control program. A substantial effort will be necessary to implement an effective non-point source program.

Specific workforce figures involve a total of 47 professionals employed in the abatement and control section and the enforcement section. The personnel listed in Table IV are the current full-time wastewater related staff.

TABLE IV
Current (1976) Region X
Wastewater Staffing Level

Position	1976
Engineer	22
Scientist	5
Technician	8
Other	12
TOTAL	47

The category of "Engineer" includes chemical and sanitary engineers. The "Scientist" category is comprised of both aquatic and fisheries biologists and ecologists. Grants assistance and environmental and engineering trainees are included in the "Technician" category. The "Other" category is a catch-all including construction representatives, environmental protection specialists, physical science administrators, and public utilities specialists.

B. Workforce Projections

When realizing that all professional judgements regarding potential growth or decline of staffing levels are based on regional limited or zero growth strategy, it does not seem inappropriate to estimate a total growth of two positions.

If, in the future, a major change in resource allocation policy were to unfold, an optimum increase of 41 positions could feasibly be foreseen.

It is realized that several areas are currently understaffed and that future legislative mandates will increase responsibilities. In most cases, those resource needs requiring additional workforce resources will be assumed through shifting of existing positions.

C. Training and Certification

The following describes ways in which the EPA Regional Manpower Office plans to assist the state agencies in reaching self-sufficiency in the priority program areas of wastewater.

1) Provide pilot grants to gear up state environmental agencies to continue training. Washington and Idaho have indicated by letter that they would request funds from their legislatures if EPA could provide grant funds for FY 77.

2) Technical assistance to state agencies by:
   a) Working on state environmental advisory committees to assist in coordinating training in each state.
   b) Requiring training strategies of each state in the Section 106 program grants.

c) Encouraging use of EPA staff as instructors at state sponsored workshops and training courses.
d) Establish, coordinate and update yearly, a wastewater treatment plant operator questionnaire. First report to be published August, 1976. It is anticipated that the results will be useful in obtaining resources for training at federal, state, and local levels.

In Region X it has been estimated by the O & M staff that 25 to 35 percent of the municipal dischargers will be in violation of their NPDES effluent limits due to lack of trained personnel.

In the draft of EPA Water Program Manpower Development Strategy dated October 2, 1976, it has been estimated that, nationally, maintenance and development of the municipal wastewater treatment plant workforce will require training 10,000 new hires and providing upgrade training of 38,000 workers each year. By 1977, in Region X, it is expected that there will be a need to train 1,000 new entry wastewater treatment plant operators and approximately 700 operators will need upgrade training. These figures are estimates based on the number of plants to be upgraded by 1977, which were determined by Regional program staff in December, 1975. It appears that major training emphasis will be on laboratory procedures to assist the plants in meeting NPDES requirements.

D. Career Potential

In view of the limited amount of workforce increase projected to occur over the next five years, career opportunities, at the regional level, can be expected to be quite limited. Turnover will continue to

be replaced by personnel with standard educational backgrounds in engineering, biology, and chemistry. Although differing ideas exist, it is felt by the majority of professionals in the office, that a broadened environmental conceptual ability in conjunction with an understanding of legislation politics and economics would provide for a more innovative and capable environmental workforce.

E. Conclusion

While legislative amendments and more stringent enforcement responsibilities are anticipated to increase the workload, workforce growth in this area over the next five years appears to be limited. A small workforce growth supplemented by inter-divisional shifting of workforce resources has been indicated as the future workforce planning strategies. The most important effort at the regional level is the continued delegation of responsibilities to state and local agencies. With training and technical assistance it is felt that state self-sufficiency may be a reality of the future.

The Office of Planning and Management Agency Guidance Report for FY 1978, in discussing the Safe Drinking Water Act, projects that a large-scale training effort, supported mainly by the states, will make available programs aimed at educating the following:

1) the general public
2) water utility owners and operators
3) industries and others engaged in underground injection
4) state and local officials (elected and program)

5) state water system agencies

6) state agencies affected by Underground Injection Control Regulations

7) Indian reservations and federal facilities

8) EPA Regional officer personnel

9) other groups (national associations and organizations)

10) other federal agencies, educational institutions, interstate carriers

Career opportunities will depend upon the effectiveness of this training strategy. It will be the responsibility of the regions to equip the states to implement this role, to provide guidance and support, and to monitor state operations and performance.

VIII. ENERGY

Federal energy-related activities within Region X take place in several agencies. The summaries of their significant efforts comprise this section. Included is a background of the Energy Research and Development Administration and current information on its regional offices, as well as information on the Federal Energy Administration, Region X.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Background

The Energy Reorganization Act of 1974 abolished the Atomic Energy Commission and created the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). This federal realignment separated regulatory from developmental aspects of nuclear energy, and centralized the major energy research and development programs. The Federal Non-Nuclear Energy Research and Development Act of 1974 further defined ERDA's role, directing the Administrator to design and construct a comprehensive national program of research and development of all potentially beneficial energy technologies, with particular emphasis on energy conservation, environmental protection, and availability of adequate water supplies.

A major task set forth for ERDA was the preparation of a national plan for energy research and development. As finalized in mid-1975, this plan set forth the following goals for energy research and development:[1]

1) To maintain the security and independence policy of the nation;

2) To maintain a strong and healthy economy, providing adequate employment opportunities and allowing fulfillment of economic aspirations;

3) To provide for future needs so that lifestyles remain a matter of choice and are not limited by the unavailability of energy;

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[1] Council on Environmental Quality, Environmental Quality, 1975 (Washington, D.C., U.S. Government Printing Office, 1975), p. 116.

4) To contribute to world stability through cooperative international efforts in the energy sphere;

5) To protect and improve the nation's environmental quality by ensuring that the preservation of land, water and iar resources is given high priority.

The following pages describe ongoing ERDA activities taking place within the geographical boundaries of Federal Region X.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Idaho Falls, Idaho Office

The Idaho National Engineering Laboratory (INEL) is located in the sagebrush desert of southeastern Idaho. More nuclear reactors and more different kinds of reactors have been built there than at any other location in the world.

Total employment for ERDA's Idaho program activities in 1975 exceeded 6,500, consisting mostly of employees of firms under contract to the government. About 350 of the workforce are ERDA federal personnel. Another 150 to 200 are employed in construction projects largely for the site. The site is the location of about 5,000 employees, with the balance employed at locations off-site, mostly in Idaho Falls.

Because of ERDA's varied and highly technical developmental research missions in Idaho, the work requires an unusually high proportion of engineers and scientists. Engineering degrees are held by nearly 1,000 of the employees. Approximately 500 others have degrees in science, mostly physical science. About one in every three of the remaining has a college degree.

The total monetary impact of INEL activities on the economy of the area and the nation has grown from 60 to over 100 million dollars each year since the Laboratory was established in 1949. Annual permanent force payroll has grown from 30 to more than 70 million dollars since 1960. In addition, construction workers wages and contractor procurement and purchase orders for equipment, supplies, materials, and services required to operate, maintain, and expand the Laboratory have averaged

from 30 to 40 million dollars annually for the past 15 years.

The site's broad mission is to develop economic energy resources by applying its engineering and scientific expertise to ERDA's research and development programs, including nuclear energy, geothermal and advanced energy sources, environment and safety, and national security applications.

Four major operating contractors are engaged in ERDA's program activities at the site: Aerojet Nuclear Company, Allied Chemical Corporation, Argonne National Laboratory, and Westinghouse Electric Corporation.

The Radiological Assistance Program at the INEL provides assistance in the form of specially selected teams which can be dispatched to points in Colorado, Idaho, Montana, Utah, and Wyoming in case of incidents involving radioactive materials. Teams, under the direction of the Idaho Operations Office, consist of trained medical and monitoring personnel who are prepared to act in response to radiation accident calls. ERDA selects the teams to fit the emergency, calling on personnel from ERDA, its contractors, and other agencies, as needed. Part of a nationwide network, the teams are capable of evaluating situations and recommending measures to control radiation hazards in the interest of public safety. Team physicians, trained in the biological effects of radiation, may be called upon by local physicians for consultation in the event of radiation exposures and related problems.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Richland Operations Office

The Energy Research and Development Administration (ERDA) operates a regional laboratory at Richland, Washington. This research center, now known as the Hanford Project, was selected in January, 1943, as the site for wartime construction and operation of an integrated complex of plutonium production nuclear reactors and nuclear fuels preparation and reprocessing plants.

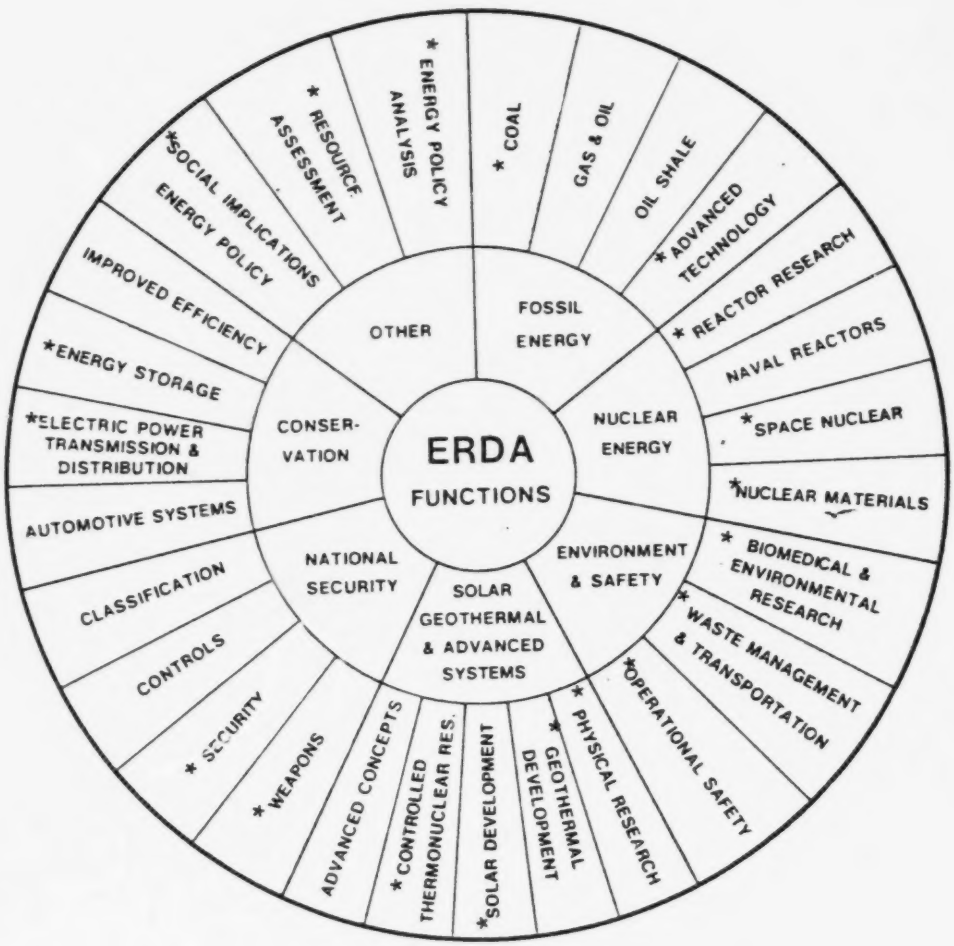
Since that time, Hanford has diversified its research capabilities to include research in the following energy related areas:

1) Conservation
2) National Security
3) Solar Geothermal and Advanced Systems
4) Environment and Safety
5) Nuclear Energy
6) Fossil Energy
7) And others

Figure 2 depicts specific programs in progress.

Figure 2

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION FUNCTIONS



* - these portions reveal program involvement areas at Hanford, both ERDA and non-ERDA funded

Although Hanford activities are still heavily committed to nuclear programs, they now cover a wide spectrum of non-nuclear research and development.

According to ERDA publication Hanford Yesterday, Today, and Tomorrow, published in 1975, there were a total of 2,400 professional involved providing technical expertise to support Hanford activities. Table V identifies, by discipline and degree level, a majority of those personnel.

TABLE V

Hanford Workforce Profile (1975)

Discipline	BS/BA	MS	PhD
Chemical Engineer	257	84	39
Mechanical Engineer	240	93	11
Chemist	190	56	59
General Engineer*	167	41	44
Business Administration Ec.	135	54	1
Electrical Engineer	119	58	6
Life Sciences	16	15	50
Mathematics Statistics	63	27	6
Metallurgical	39	23	24
Earth Sciences	8	5	4
Atmospheric	4	10	7
Liberal Arts	75	16	2

* i.e., safety, heating and ventilating, instrumentation, agriculture, structural, and estimating

The human resources listed above are employed by many supporting contractors; some of the major employers include Atlantic Richfield Hanford Company, Vitro Engineering, Hanford Environmental Health Foundation, United States Testing Company, Boeing Computer Services, Inc., and Battelle Memorial Institute.

Specific workforce projections were not available due to the competitive bidding process and the numerous employers involved.

FEDERAL ENERGY ADMINISTRATION

Region X

The Federal Energy Administration (FEA) receives its authority from the Energy Policy and Conservation Act of 1975. This Act amended the Emergency Allocation Act, the Federal Energy Administration Act, and the Energy Conservation and Production Act.

The mission of FEA, as prescribed by the Federal Energy Administration Act of 1975, is cited as follows:

> "to conserve scarce energy supplies, to insure fair and efficient distribution of, and the maintenance of fair and reasonable consumer prices for, such supplies, to promote the expansion of readily usable energy sources, and to assist in developing policies and plans to meet the energy needs of the Nation . . . and to assure a coordinated and effective approach to overcoming energy shortages."

There are approximately 30 professionals involved with Region X FEA activities. It would be difficult at this point in time to make any projections concerning this workforce, as FEA is programmed to terminate on December 31, 1977. A program organizational chart has been included as Figures 3, 4, 5 and 6 to assist in defining program activity.

Figure 3

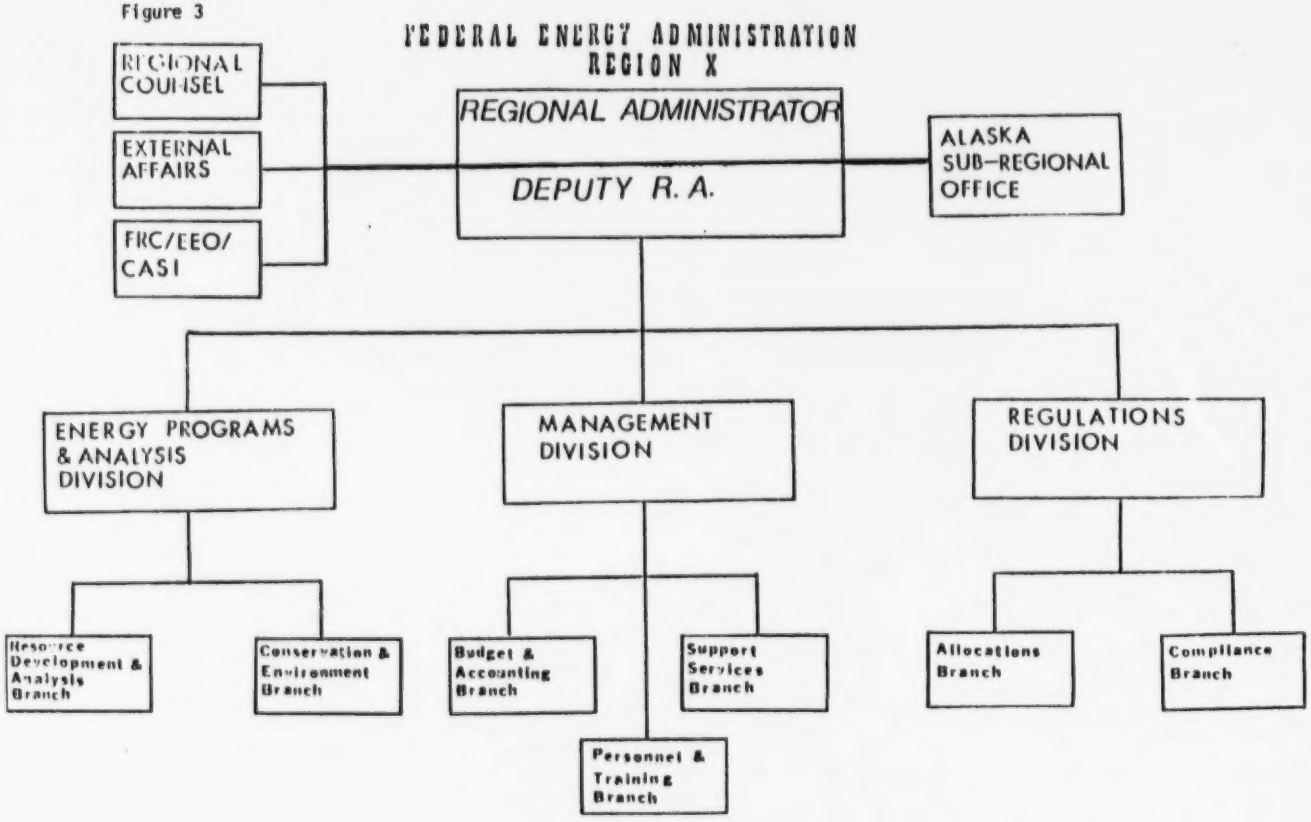

FEDERAL ENERGY ADMINISTRATION
REGION X
REGIONAL COUNSEL
EXTERNAL AFFAIRS
FRC/EEO/ CASI
REGIONAL ADMINISTRATOR
DEPUTY R. A.
ALASKA SUB-REGIONAL OFFICE
ENERGY PROGRAMS & ANALYSIS DIVISION
MANAGEMENT DIVISION
REGULATIONS DIVISION
Resource Development & Analysis Branch
Conservation & Environment Branch
Budget & Accounting Branch
Support Services Branch
Personnel & Training Branch
Allocations Branch
Compliance Branch

Figure 4

MANAGEMENT DIVISION
REGION X

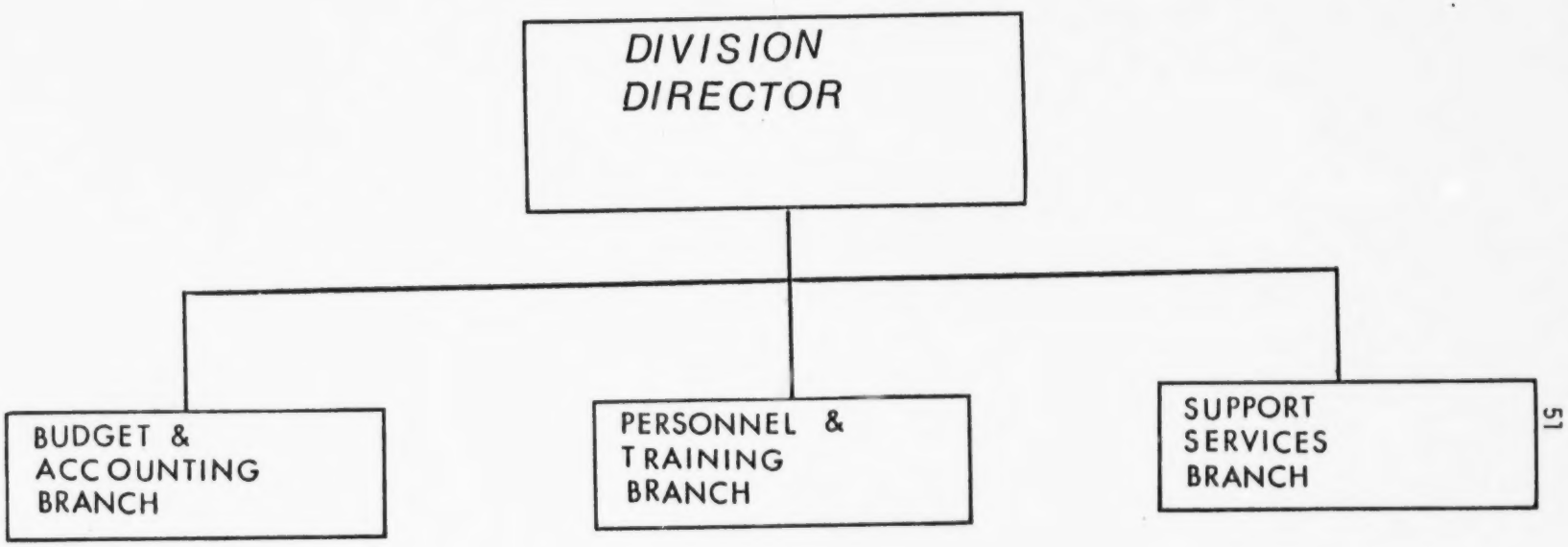


Figure 5

ENERGY PROGRAMS & ANALYSIS DIVISION

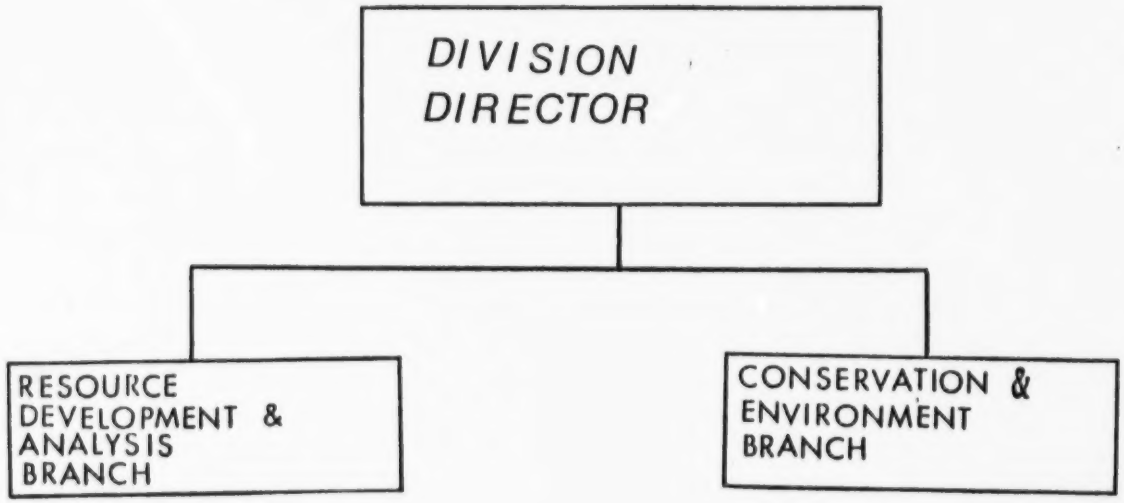
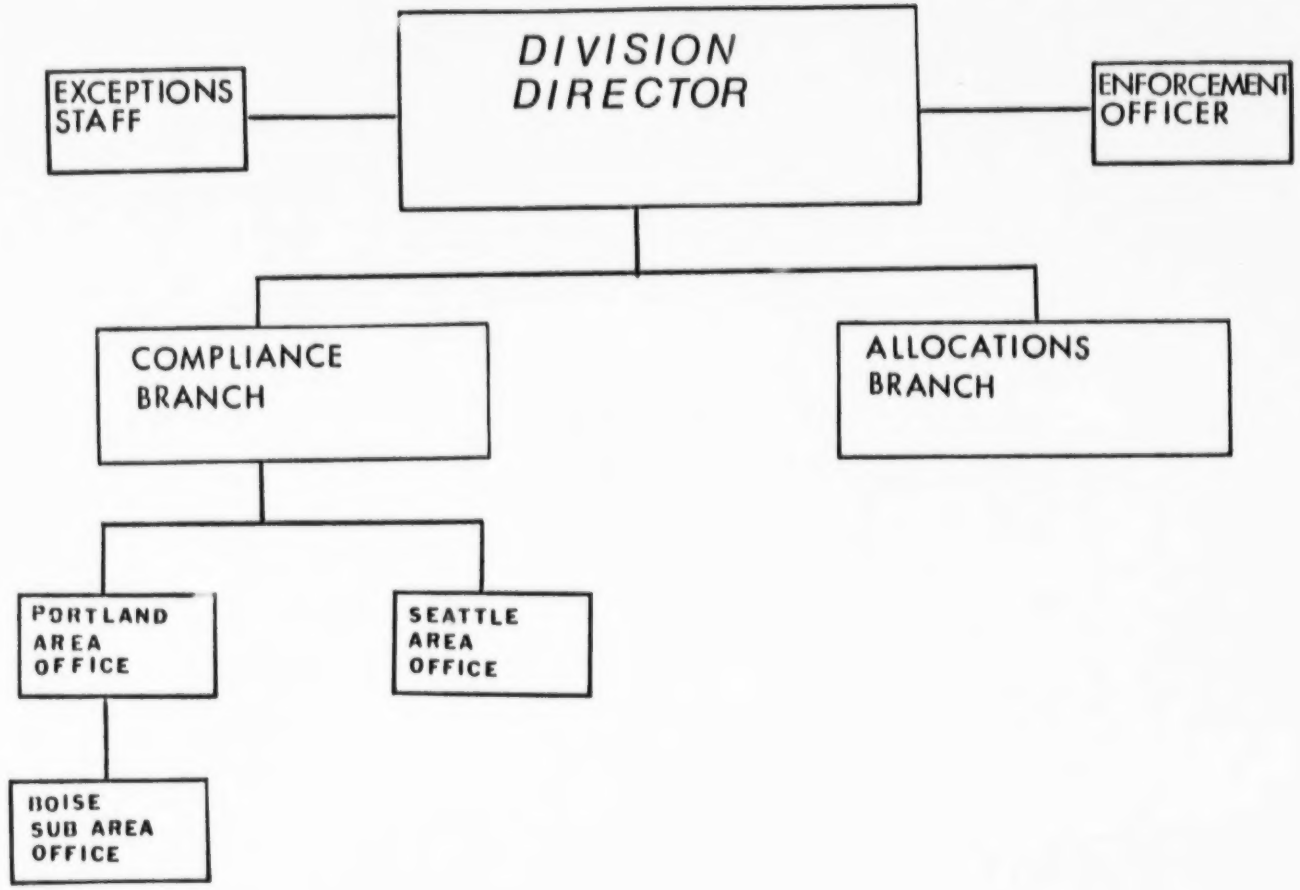


Figure 6

REGULATIONS DIVISION
REGION X



SUMMARY

EPA Region X has, in the past and will continue in the future, to be innovative and agressive in implementing the various pollution control programs for which it is responsible. A consensus of professional opinions concerning workforce activity would indicate an overall need for extensive staffing increases in the areas of enforcement, management, planning, and training. Although extensive needs have been identified, professionals in the field have indicated that only limited growth is anticipated. This apparent discrepancy is due primarily to financial constrictions at the federal Headquarter level in conjunction with state regulatory activity involving primacy acceptance.

As has been indicated, additional staffing positions are expected to develop in response to recent legislation developing the Resource Conservation and Recovery Act of 1976 and the Toxic Substance Control Act of 1976. As is the case in the majority of pollution control program areas, future staffing needs are highly dependent upon state regulatory activity. If the state environmental agencies within Region X's geographical area accept primacy regarding the regulatory functions mandated in recent legislation, then only limited regional staff growth will be needed to implement such programs. However, if the experience of past program acceptance is used as our indicator for state regulatory activity, then then Regional personnel may be expected to administrate new programs for three to five years prior to state agency primacy acceptance.

Sources in the field have suggested that additional Regional personnel will be needed to provide technical assistance to the states in an effort to accelerate state program primacy acceptance capabilities. This workforce is expected to include engineers, technicians, scientists, and management oriented professionals. Keeping in mind that workforce growth is anticipated to be limited, much of the future workload is expected to be handled through shifting of existing workforce resources. In view of this management level decision, extensive upgrade and on-the-job training activity will be necessary to provide for competent, effective use of existing personnel.

If future high priority program objectives are to be efficiently accomplished with limited workforce resources, the provision of highly specialized effective training will be an extremely important program component.

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